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SOIL conservation

XUM

SOIL conservation

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Youth in action . . .

As a followup to last August's articles about outdoor classrooms for conservation learning at first hand, this month's lineup features young people who learn by **doing** something in the world of conservation.

The lead article (p. 75) describes how city elementary school children in Texas build erosion-control structures, take soil samples, make weather forecasts, and do other chores at a 300-acre camp.

In other articles, young people in organized groups make a meaningful contribution:

Vocational agriculture students (p. 77)
American Indian students (p. 78)
Girl Scouts (p. 79) and Boy Scouts (p. 80)
Job Corps (p. 81)
Neighborhood Youth Corps (p. 83)
and church fellowship members (p. 84)

As always, SCS is up to other things besides what our magazine theme happens to be. We help the city of Denver match water supplies wth need (p. 82); migrant farmers in Texas get more of their water to thirsty crops (p. 86); and Wisconsin residents find outdoor fun at a watershed lake (p. 96).

COVER: Just a rhododendron, but an interesting part of the outdoors for these Vancouver, Wash., students. Their city has an environmental education program.

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They learn by doing

The sign near the entrance warns, "SLOW—Children at Work."

This is Camp Tyler, a 300-acre outdoor educational laboratory near Tyler, Tex. Here, children from city elementary schools trap gophers, build check dams, make weather forecasts, study erosion and pollution, and learn of their relationship to the environment in ways not possible in a formal classroom.

Camp Tyler serves all of Tyler's 17 elementary schools. Although camp attendance is voluntary, about 95 percent of the eligible children attend. In its 22 years, about 80,000 children have studied at Camp Tyler.

The camp program is an extension of the school curriculum. Much emphasis is placed on the natural sciences. Conservation education is more than a mere part of the curriculum. It is a way of life in which the Conservation Pledge is almost as familiar as the Pledge of Allegiance.

On the shores of 2,500-acre Lake Tyler, the camp offers a variety of opportunities for studying the natural environment. Whether in the woods or along the lakeshore, the children are continually learning ecology. While they're learning to bait a hook or to seine minnows for bait, they're also learning something of pond life—what fish to eat, how fish get food, how water quality affects both marine and animal life.

James E. Dudley, director of Camping and Outdoor Education, says, "At Camp Tyler, when studying conservation, we plant trees and grass, or we build check dams. Children learn how to take soil samples, test them, and determine what can be grown in these soils. In studying weather, they learn to use real weather instruments to make weather predictions."

The children also learn something about forestry and forest management. They learn why trees grow better in one location than in another, and what causes some trees to grow crooked. They discover many kinds and uses of trees and learn how trees conserve soil, water, wildlife, and other resources.

While at camp, the children cut wood, build fires, make beds, mop floors, dry dishes, and do other jobs. Teacher-counselors skillfully direct both tours and chores to bring out colorful and interesting information about soil, forests, streams and wildlife, and other resources.

The teacher-counselors stress the importance of clean water for homes and industry. The class then visits the city water-pump station and discusses what happens to the water

Classroom Teacher Thorndike Lewis works with his students to rid Camp Tyler of animal pests.

from the time it leaves Lake Tyler until it reaches the taps in their homes. A visit to the camp's blacksmith shop turns into a discussion of the types of fuels used, which ones burn clean, and which contribute to air pollution.

"We are trying to teach the kids of today not to make the mistakes we did in managing the environment," Dudley said.

Camp Tyler was conceived in 1945 when the Tyler Kiwanis Club began work on plans for a summer camp for Campfire Girls. Dr. Mortimer Brown, superintendent of schools, was concerned about public apathy toward the deteriorating environment. He became interested in the school-camping movement and began to envision the camp as a year-round facility. The Tyler Board of Education suggested that the camp be operated by the public schools as an outdoor laboratory during the school year and a recreational camp during summer months.

The project drew prompt community interest and support, and plans were soon broadened to serve all the camping agencies and service clubs within the community.

The Smith County Youth Foundation established to raise funds for the camp solicited help from specialists in planning the camp's physical layout. The camp was designed for program work. Laymen, educators, consultants, local firms, state and federal agencies, and individuals contributed time, talent, elbow grease, and money.

The Soil Conservation Service helped with drainage, terraces, diversions, tree planting, grass management, and other conservation measures. Further help was provided by the National Park Service, Fish and Wildlife Service, and the Forest Service.

Teachers and students from kindergarten through the fourth grade use the camp as a base for day-long field trips. Originally, fifth and sixth grade students and teachers lived at the camp for a week, but steadily increasing enrollment eventually forced curtailment of camp residence to 2 or 3 days. Certain days during the school year are also reserved for special education classes for physically or mentally handicapped children.

In 1950, a 150-acre one-family school farm was opened on property adjacent to the camp to provide realistic farm experience for Tyler children. SCS conservationists helped draw up a farm plan and devise a balanced farm program with dairying as the major operation.

A resident farm operator, under the direction of the supervisor of vocational agriculture, is in charge of the farm program. The "farmers" are high school boys enrolled in vocational agriculture courses. Each helps on the farm, too, and a high point of their stay is gathering eggs laid by the farm's 400 hens.

Camp Tyler has excited the interest of educators all over the United States and as far away as Australia. Thousands of visitors have toured the camp, and Director Dudley receives 300 to 400 letters of inquiry each year.

The camp's friends are now seeking ways to provide more time at camp for the kids. A committee is searching for a site to be used as a second Camp Tyler.—GLORIA E. MCDAVID, *formerly information specialist, SCS, Ft. Worth, Tex.* ♦

Camp Tyler Director Jim Dudley watches as Teacher-Counselor Meredith Haynes teaches a class in pond ecology. (The girls think they're only learning how to fish.)

Vo-Ag students plant food for wildlife

Sportsmen, community businessmen, high-school agriculture students, and a forest industry have given a timely boost to the wildlife and the economy of a section of West Virginia.

Their efforts—in the form of plantings of food for deer, turkey, and grouse—were channeled through the Little Kanawha Resource Conservation and Development Project.

The plantings are in the Hughes River Public Hunting Area, established in 1963 under joint management of the West Virginia Department of Natural Resources and the Timberlands Division of the Westvaco Corporation.

Wood, water, wildlife, and recreation are the products of Westvaco's forest land, company officials say, and it is the responsibility of management to provide for all four. Hunting is by permit with payment of a small fee.

The Soil Conservation Service worked with the RC&D Project's wildlife and recreation committee on arrangements for the plantings. Ken Greene, a Parkersburg businessman, as chairman of the committee, helped to stimulate interest. Joe Collins, woodlands manager for the timber firm, helped by selecting planting sites and providing equipment.

Increased use of hunting opportunities in the area, the committee said, would contribute to the economy of the community. Hunters would be attracted from Ohio as well as West Virginia.

Local businessmen, individuals, and sportsmen's groups agreed to underwrite the cost of the effort. The committee estimated that each half-acre planting would mean an outlay of about $30 for seed, fertilizer, and labor. The company would clear and prepare the planting sites.

The Wirt County vocational agriculture teacher, Phil Winters, sensed an educational opportunity for his students in the project. He organized 20 of them into a crew to study the project plans, buy materials, and do the plantings.

By late summer eight sites had been planted to millet, sorghum, soybeans, and buckwheat.

As the hunting season opened, the success of the project was readily evident, and the committee began work on plans for expanding the program next season.—ED W. GASKINS AND D. J. COLLINS, *area wildlife biologist, SCS, and woodlands manager, Westvaco Corporation, Parkersburg, W. Va.* ♦

A vocational agriculture student earns while he learns as he seeds wildlife food plants in a West Virginia hunting area.

Too much talk? . . . Call a council

It was a communications challenge, and for a time it appeared the effort was on the wrong wavelength.

On the receiving end were 300 young representatives of major Indian tribes. They had gathered at Camp Asaayi, N. Mex., at the Environmental Education Encampment sponsored by the Boy Scouts of America and the U.S. Department of the Interior's Bureau of Indian Affairs.

When they finished the course, they would return to their people —it was hoped—and assume leadership in environmental education work.

The instructors—with the job of communicating — were specialists in various techniques of managing the environment. They included nine Soil Conservation Service conservationists. Fifteen stations were set up, at which each of 15 groups would spend a few hours in listening and learning.

But, after the first afternoon, it was evident that the lines of transmission were not open. No questions, no participation. Only stony countenances. The message obviously was at best faint and unclear.

There was need for a council.

Otis O. Fuller, coordinator of American Indian relationships for the Boy Scouts, opened the discussion. Each group of young men was represented. The representative was asked to speak. The "feedback" was loud and clear—some sessions had been too technical . . . too much lecturing.

A quick revamping of the procedure was in order. Classes scheduled for 3 to 4 hours were shortened to 2 hours. Class time was, for the most part, converted from lectures to participation by the students.

SCS Soil Scientist George Anderson had a "treasure hunt." The young men scattered as the class opened, to find and bring back one object in the vicinity. The "treasures" were sorted into piles.

By separating rocks from wood, white rocks from black rocks, large rocks from small ones, Anderson showed how a classification of soils or plants is done.

The class went to a nearby gully to see the soil strata and used hand

Boys at Camp Asaayi measure range vegetation with Ron Julian (above left), and show their interest in falcons with Morlan Nelson (below left).

levels to survey a contour line across a hillside. A walk around the camp was an opportunity to identify gullies and to discuss causes and needed conservation work.

The range planning station offered a learning experience for the instructors. As plants were identified, the students described how their parents and ancestors used them. The instructors learned which plants had medicinal value, which were food, and which were used for seasoning or other purposes.

At the "Man and His Environment" station, Ron Batchelor, Arizona state biologist, and his fellow instructors asked each class member to draw on paper the kind of place in which he would like to live.

Later discussions of the drawings and the reasoning behind them made it easy for the instructors to point out why one type of environment was preferable to another and why conservation of the environment is a critical need no matter where you live.

Trained eagles, falcons, and owls brought to the encampment and demonstrated by SCS Conservationist Morlan Nelson also proved effective in shortening the first-day communications gap. The demonstration encouraged lively discussion of the interrelationship of resources and the need for man to recognize the value of all species. With a golden eagle in view, the ancient mythology and symbolism surrounding the great eagle took on a new meaning among the young Indian men.

By encampment's end, the lesson in communication was clear, and it was agreed that the environment is a fascinating subject when student and instructor together can talk of the marvels of the world around us.—NEIL SAMPSON, *information specialist, SCS, Boise, Idaho.* ♦

A place to know nature . . .

Girl Scouts dedicate camp to learning

Rancho del Chaparral in northern New Mexico is 1,200 acres of pines and spruce, streams and canyons—and scores of other outdoor wonders to see and hear and touch.

The Rancho is dedicated to the experiences of youth in the world of nature. Through the summer its trails resound with the excited voices of hundreds of Girls Scouts.

Here girls experience the soft fragrance rising from a pine needle carpet, the taste of pure spring water. Here they learn the value of soil, water, forest, and wildlife in their lives and how to live in harmony with nature and their fellow human beings.

Work to turn the Rancho into an exciting learning experience for thousands of future campers began in 1965 shortly after the ranch was acquired by the Chaparral Scout Council. In July 1969 the camp was dedicated with 1,930 young campers on hand for the first season.

The council entered into a cooperative agreement with the Jemez Soil and Water Conservation District, and with the help of the Soil Conservation Service and other agencies developed a long-range resource conservation plan for the area. The Forest Service, Bureau of Sport Fisheries and Wildlife, and New Mexico Department of Game and Fish played important roles in this conservation planning.

Senior Girl Scouts surveying for stabilization work on lagoon bank.

To get needed conservation measures applied without delay, the council arranged with SCS—under a salary cost-sharing agreement—to have Charles Sundt, a full-time SCS professional at Bernalillo, spend 9 weeks at the camp in the 1970 season.

With much of the actual work being done by the Scouts, several parts of the conservation plan were completed this summer.

Under Sundt's guidance a mile in the system of trails was mapped, cleared, graded, and stabilized to prevent erosion.

A Forest Service team from the Cuba Ranger District planted a 3-acre observation plot to Ponderosa pine. SCS and the council cooperated in providing trees and grass for stabilizing a bank along the sewage lagoon. The New Mexico State Department of Forestry contributed a four-wheel-drive vehicle for fire control. The Bureau of Sport Fisheries and Wildlife furnished the designs for ponding the structures for the fishing habitat in the Rio de las Vacas that flows through the Rancho. The New Mexico Department of Game and Fish provided technical supervision during construction. The stream is to be stocked with fish by the Bureau of Sport Fisheries and Wildlife.

In addition to supervising conservation work, Sundt also provided instruction in resource conservation to the campers. The girls learned to identify many of the plants and to know the value of a watershed. And above all, they began acquiring an appreciation for the unforgettable wonders of the outdoors.—DICK BARBER, *district conservationist, SCS, Bernalillo, N. Mex.* ♦

Boy Scout models aid watershed project

Steven Cronin lives in Harvard, Mass., one of four communities awaiting completion of the Delaney Reservoir for flood prevention and wildlife development.

Steve Cronin exhibits his model of a Public Law 566 watershed project. Frances Sherburne, chairman, Middlesex District (left) and Boy Scout from Lexington Minute Man Troop review model of Nashoba Watershed Project.

As a Boy Scout, Steven has been interested in the entire SuAsCo Watershed Project that will benefit his area.

Development of the Delaney site will provide a 160-acre permanent pool for resting and nesting ducks, chain pickerel, and pan fish. In times of flood-producing rains, the reservoir will hold back 3,500 acre-feet of water for controlled release.

Using construction drawings, topographic maps, aerial photographs, and field studies, Steven fashioned a scale model of the Delaney complex. The model includes homes, industry, vegetation, and water with the proposed engineering works.

The Middlesex and Northeastern Worcester County conservation districts, Massachusetts Water Resources Commission, Division of Fisheries and Game, and Department of Natural Resources sponsored the watershed work under provisions of Public Law 566 administered by the Soil Conservation Service.

Steven's model, which has been on display in the office of the Water Resources Commission, has helped to provide information for citizens of the area concerning plans for the development. Steven says the work he has done has helped him to understand the relationship of man to the environment.

The Senior Patrol of Troop 193 in Lexington used a similar technique to explain features of the proposed recreational reservoir on Nashoba Brook, which also is a part of the SuAsCo Watershed Project. SCS provided technical information and the Middlesex District provided modest funding for the project.

The Scouts worked on a model for a Scouting Exposition visited by 25,000 persons. They received a blue ribbon for their efforts. Featured was a cross-section of dam and water-control structure showing the principal spillway, antiseep collars, core, antivortex device, and emergency spillway.

The work of Steven Cronin and the members of Troop 193's Senior Patrol is typical of the work Boy Scouts are doing and can do in helping communities understand the purposes of resource conservation. —ROBERT N. MOREHOUSE, *district conservationist, SCS, Acton, Mass.*♦

Job corpsmen learn on conservation farm

The crops this year on the Steed farm near Syracuse in Davis County, Utah, were corn and potatoes as usual. But there was another important yield. Young men on Steed's farm are learning conservation principles along with other farming skills. And Joseph Steed is getting his conservation farm plan applied. The farm has been in the Steed family for more than a hundred years.

Steed, a cooperator with the Davis Soil Conservation District, was going ahead with his conservation farm plan, but he was having trouble finding enough money to make the kind of progress he hoped for.

In 1965 the contractor for the Clearfield Job Corps Center was looking for a farm where underprivileged young men would learn modern farming methods. Steed's 200-acre place, it developed, was what was needed. Steed had 80 acres of irrigated cropland. The rest of the farm was native meadow.

The center leased Steed's land and arranged to furnish labor and equipment to raise crops, build corrals and buildings, and install the remainder of the practices in Steed's conservation plan. The center hired Steed to help with irrigation and to care for the livestock on weekends and holidays.

About 65 boys are enrolled in the farm program, in groups of 30 to 35. Each group works every other week on the farm. The boys attend classes in alternate weeks, receiving instruction in basic subjects.

On the farm the boys work in groups of four or five with one of their number a leader who acts as foreman for a certain job or piece of equipment. Farm instructors are Robert Litchfield and Robert J. Bingham, both practical men with long experience in farm and building work.

Potatoes produced on the farm this year are used in the center's kitchen. The corn is put up as silage and fed to the steer herd.

With technical help from the Soil Conservation Service and cost-sharing through the Agricultural Stabilization and Conservation Service, corpsmen have improved irrigation on 5 acres, installed a mile of concrete irrigation ditch and a quarter mile of pipe, and built 50 water-control structures.

SCS specialists, while surveying the ditch work and supervising the land leveling, showed the corpsmen how to use the instruments and explained the conservation work.—EARL SPENDLOVE, *district conservationist, SCS, Layton, Utah.* ♦

Robert J. Bingham, Job Corps instructor, tells William Brown (right) and Joe Luvis Peavey III how land leveling is done.

XUM

From the mountain . . .

Denver reaches west for water

By Jack N. Washichek
Snow survey supervisor, SCS, Ft. Collins, Colo.

Rub out the mountain snows and you can color Colorado's "Mile High City," Denver, a dull brown.

Denver is in a semiarid region and depends for its water supply on snowmelt runoff from the mountains to the west.

Precipitation in the growing season is about 9 inches. But about 20 percent of the time it is less than 6½ inches.

Skillful management is needed to provide adequate water for the Denver metropolitan area.

Most of the moisture brought into Colorado from the Pacific is deposited as snow west of the Continental Divide. The bulk of this water normally flows into the Colorado River system, which takes it southwesterly to the Gulf of California.

Since Colorado's major population centers are east of the divide, it has been necessary to undertake projects known as trans-mountain diversions to take this water to the area of greatest need.

The South Platte, an eastern slope river, provides about 40 percent of the water requirements. Major flow usually occurs in early summer months. Many reservoirs are required to trap early water for use during the rest of the year.

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Eleven Mile Reservoir contains 97,779 acre-feet and is fed by the South Platte River. Antero and Cheesman reservoirs also derive their water from the South Platte and have a combined storage of almost 95,000 acre-feet.

Dillion Reservoir lies west of the Continental Divide and is the largest in the system, containing 254,036 acre-feet when full. It lies at an elevation of 9,200 feet. This reservoir is 60 miles west of Denver on the Blue River, a tributary of the Colorado. Other west-slope supplies are derived from collection systems on the Williams Fork and Frazer rivers and stored in the 43,000 acre-foot Gross Reservoir on the Eastern Slope.

Water is transported from these collection systems and reservoirs as needed to smaller terminal reservoirs located near the city. The Denver Water Board, which provides water to nearly 750,000 persons and thousands of businesses in the Denver metropolitan area, must be continuously aware of the potential water supplies.

The snow-survey program of the Soil Conservation Service plays an important part in the management of these facilities. Two Denver Water Board employees read five snow courses, and SCS supplies data on 39 others to provide a constant vigil on this important resource.

Data from these snow courses are compared to data from previous years. This is an index forecast method. The amount of runoff is estimated from past streamflow records and snow pack. This provides the Denver Water Board with a good idea of how much water it can expect in a given year. Will this year's streamflow be adequate or will some water previously stored in the reservoirs be needed to supply demands? If streamflow is expected to be much below normal, direct flow from the streams will not supply all demands. Water must be moved from high reservoirs to lower ones, in readiness for anticipated demands.

Management must look at current storage and potential runoff and decide the best short- and long-range procedures to follow. If there is a large carryover from the previous year the decisions are relatively simple. If storage is low, then management must determine which reservoirs should store, and when, as well as which reservoirs should be depleted, and to what extent. There will be no new water supplies until next spring. SCS snow-course data are an invaluable management tool in making these decisions.

As population expands and more industry moves into the Denver area, more frequent checks on the snowpack will be necessary. Continuous checks will enable the Denver Water Board to:

- Start movement of water at the earliest possible time.
- Make better forecasts, because peak of snowpack will be known instead of only April or May 1 measurements.
- Be constantly alert as to how much snow has melted and how much remains during the spring melt.

Even with snowpacks equaling the historical average every year this resource will not be able to provide water for the projected population much beyond the year 2000. Several alternatives exist. Among those being studied are re-use of sewage effluent, weather modification, and water from other areas outside the Colorado area, such as the Missouri River Basin. Each would be quite expensive. The Denver Water Board continues its quest, with help from SCS snow surveys, to meet current and future water needs of the "Queen City of the Plains." ♦

SCS snow surveyors (above left) use a special tube to measure snow depth and moisture content. Their data help in regulating the reservoirs such as Williams Fork (left) to assure Denver enough water.

Youth power aids stream and road work

Two detachments of the Neighborhood Youth Corps merit thanks for much of the seedbed preparation, seeding, and mulching along roadsides and streambanks in the Tioga County Soil and Water Conservation District in New York. The youths were employed under the Tioga Opportunities Program, Office of Economic Opportunity.

The district employed 17 NYC youths for work on two measures in the South Central New York Resource Conservation and Development Project. Eleven worked on highway improvement and beautification. Six worked on streams to improve fish and wildlife values along the West Branch of Owego Creek, rated the county's best with a potential for trout.

All townships in the county contributed to the roadbank program. RC&D Project sponsors made funds available for seed, lime, fertilizer, mulch, and netting. The district was the prime contractor.

The road embankment work has established an excellent demonstration of stabilization and beautification. Roads were being improved in the county at the rate of 20 miles a year with most needing stabilization of the banks. The road embankment looks good. Maintenance costs will be reduced with offsite siltation damage reduced.

In the stream-improvement program the youths built four types of structures designed to control erosion and improve fish and wildlife habitat.

The stream-improvement plan includes land treatment and fencing of the channel where needed. The New York Department of Environmental Conservation is supplying logs, wire, spikes, and other materials. A district employee supervises the work. The district is looking at other streams for similar improvement.—LLOYD E. WRIGHT, *district conservationist, SCS, Owego, N.Y.*

Working in the world around them

Concern for the world around them is nothing new to the Senior High Fellowship students from the Kirk of the Hills Presbyterian Church in Tulsa, Okla.

For 51 weeks the students work at various jobs in their own community earning enough money for another week of work and study someplace in the United States during the summer.

Last summer their destination was the Burnamwood Presbyterian Camp near Irvine, Ky., a 450-acre camp serving more than 15,000 people in 150 Presbyterian churches in central and eastern Kentucky. Their work for the week involved them in forestry, engineering, beautification, and conservation as they created a workshop amphitheater in the heavily wooded hills comprising the camp.

Burnamwood is being developed as the major camping and outdoor center in Kentucky for the two denominations which own and operate it—the United Presbyterian Church in the United States of America and the Presbyterian Church in the United States.

Only about 15 acres of the camp will be developed with permanent facilities such as a swimming pool and lodges for year-round meetings and camping.

Young hands and minds work hard to learn about and improve on the natural world at Camp Burnamwood.

The remaining 435 acres will be left in woods with only primitive campsites and hiking trails exposing future campers to the solitude and beauty of the surrounding hills.

Guidance for laying out the trails, selecting primitive campsites, and for seeding and erosion problems, as well as the design for a new dam that has just been completed, is being provided by the Soil Conservation Service. And volunteer help such as the Kirk of the Hills students is providing most of the work force.

In the week following their arrival, the students found themselves involved in not only hard physical work but also in some difficult mental exercises as well.

What was the best site for the new worship center? How could the amphitheater be constructed to fit into the natural surroundings? How could erosion be prevented along the path to the theater? What trees could be cut without damaging the woods or creating erosion problems?

Some of the decisions were made with the help of SCS personnel and the camp director, Rev. Kenneth D. MacHarg. The site selected for the amphitheater was on the side of a hill overlooking the lake just beginning to fill with water behind the new dam. The path from the major cabin area would run across the top of the dam, up a steep bank, and then through a heavily wooded area along the side of the hill.

Using the trees cut in the clearing operation, the students trimmed, cut, banked, and staked the logs into the heavy mulch covering the area, forming two seating-sections of five rows each. A waist high stump of one tree was left to serve as a pulpit.

When more logs were needed, the students selected and cut several trees on the peninsula jutting out into the new lake. These logs had to be trimmed, rolled down a steep bank, floated across a stream, and hauled up another steep bank. Much to the dismay of the junior lumberjacks, two of their hard earned logs mired in the mud along the bank of the stream and sank in waist-deep water.

During the logging operation, another section of the crew was busy on the trail leading to the amphitheater. To prevent erosion on the steep bank and along the hillside path, the students constructed and packed log steps in the side of the bank and then cut, packed, and mulched a foot trail through the woods.

Although the scheduled study tour of the Appalachias was still ahead of them when the students left on Saturday, they had already learned a great deal about man's relationship to his environment.—JANICE L. CURTIS, *SCS, Information Division, Washington, D.C.* ♦

XUM

Better canals mean more water

By Elias J. Guerrero
District conservationist, SCS, Rio Grande City, Tex.

Below Falcon Dam, where the Rio Grande continues on its way to the Gulf of Mexico, the river is a source of water to nourish and refresh the crops of Reynaldo Barrera and his 26 neighbors who make up the Fronton Irrigation Cooperative.

The members of the cooperative, all Mexican-Americans, are allotted 1.5 acre-feet a year from the Rio for each of the 575 acres of the cooperative.

If a third of that water is lost to seepage from unlined irrigation canals, it can make quite a difference in income—an income which would be modest even under the best conditions.

This was happening, and that is why the Fronton Cooperative sent Barrera to ask the Starr County Soil and Water Conservation District directors what might be done. The inquiry was timely, since the district and the Soil Conservation Service are working toward a Resource Conservation and Development Project in the Rio Bravo area.

The Fronton Cooperative came into being in 1939, when Barrera's father and 17 other farmers joined to buy an irrigation pump and build the water-delivery system. With mules and fresno scrapers and much exhausting labor they fashioned the canals and the numerous distribution boxes.

Most of the members are among the migrant Mexican-Americans who trek north each year following the harvesting of crops. In the spring, they usually prepare their land, plant their crops, then leave with the entire family—assigning one person to stay and take care of their belongings. They return in November. The average family income is about $4,500 a year.

The water pumped from the Rio Grande below Falcon Dam is under the jurisdiction of the 93d. District Court at Edinburg, Tex. The distribution is handled by a special watermaster appointed by the court. To the Fronton Cooperative members every drop of their 863 acre-feet of water is important.

A survey by SCS engineers showed that 30 percent of the water pumped for the cooperative's use was being lost to seepage from the main canals. This meant an annual loss to the cooperative of about 260 acre-feet which at a value of $15 an acre-foot adds up to an annual loss of $3,870.

A Resource Conservation and Development area proposal was signed asking help to line the main canals with concrete and build new distribution boxes, a job that SCS estimates will cost about $35,000.

Reynaldo Barrera, president of the cooperative, at a main distribution box that his father and other farmers built by hand.

Water flows down the canals built with mule-power long ago, but a third of it fails to arrive at the fields of the Fronton Cooperative.

The Starr County Agricultural Stabilization and Conservation Committee was asked for help through its Special Projects program. The cooperative members may get as much as 80 percent in Federal cost-sharing.

County Commissioner Amando Pena, aware of the financial plight of the cooperative members, has persuaded the Starr County Commissioners Court to agree to pay the difference between the total cost and the Federal cost-share.

Members of the Fronton Cooperative are looking forward with satisfaction to being able to use more of their water supply. ♦

Christmas trees help land and pocketbook

Conservation of the land they farm is the principal interest of Harold and Betty Baker of Kirksville, Mo. Raising Christmas trees comes in second.

They started with 90 acres in 1954. Erosion had taken a severe toll. Baker planted Christmas trees on an old field in 1959 as an erosion-control measure. The crop proved successful in two ways—controlling erosion and producing a profit.

Baker added 290 acres to the operation and planted 94,000 trees in all. He will use as much of the entire acreage as he can for Christmas trees and let wildlife enjoy the rest.

It is a matter of pride with Baker that the look of the land in its present use is much different from its condition when he became its steward. Sound conservation protects all areas. Natural drainageways are in native shrubs and trees; areas not suitable for Christmas trees are in wildlife food plots, and the fishing lake, built with the help of the Soil Conservation Service and the Missouri Department of Conservation, is properly stocked.

Baker, cooperator with the Adair County Soil and Water Conversation District, plants trees in grass sod. He found that disking of the site before planting had resulted in the loss of too many seedlings.

In the first and second years of tree growth, Baker reduces competition from weeds and grasses with tractor-powered mowers.

The third year a shearing crew directed by Mrs. Baker moves in. Crew members are high-school students who shape the trees to please choosy buyers. Shearing continues each year. Before cutting in the fall, each tree marked for harvest gets a spray coat of green to help nature's paintbrush.

In late November, Holiday Tree Farms become a hive of activity. Baker harvests only a small number of trees for people who do not wish to cut their own trees. Most sales are to customers—many of whom bring the whole family—who select and cut their own trees. This "choose and cut" system has become profitable and popular.

Since 1967 the Bakers have been realizing a satisfactory income from their tree plantings. But satisfaction comes, too, from the conservation work they have done and from the abundant wildlife on their farm.

Professional conservationists regard the Baker operation as an outstanding example for landowners in northeastern Missouri.—JOHN W. MANARY AND FRANCIS T. HOLT, *district conservationist, SCS, Kirksville, Mo., and woodland conservationist, SCS, Columbia, Mo.* ♦

Betty Baker shows the fine art of shaping a tree for Christmas.

Conservation in action...

Conservation comes to summer camp

Louisiana

Directors of Louisiana's 75 or more summer camps for boys and girls are putting resource conservation at the top of their list of essential things to be done.

To have a successful camp—a place where youngsters get to know the place that soil, water, and plants occupy in their lives—the camp's resources must have conservation care, most directors say.

The Louisiana Baptist camp, built 10 years ago, had water-management problems. Roger "Jiggs" McCoy, director of the camp, in carrying out a conservation plan, provided for disposal of the water standing in low areas. On eroding places he seeded grass or lined the areas with concrete.

The plan also called for a mile-long nature trail through the 50 acres of timber. The 300 young people attending each camp session get close to outdoor life along the trail, stopping at points to study plants, trees, and the world of water.

M. F. Peters, manager of the Episcopal state camp in central Louisiana, is a cooperator—like other directors—with his soil and water conservation district. SCS specialists assigned to the district helped design and install a system to slow runoff from the camp and lead it into a grassed waterway.

Peters' plan included a series of nature trails that more than 1,000 young campers follow each summer. A night in the woods is part of the camp program.

The state camp of the Church of God manages 30 of its 50 acres for pine production. A first step in the camp's development was a conservation camp plan by Director Clayton Perry with help from SCS District Conservationist Jesse Goss. The plan calls for cutting timber every 5 years and for erosion control on roadbanks.

Lecturing and guiding young campers in conservation work is a periodic assignment for SCS conservationists in Louisiana. They teach conservation principles to more than 10,000 Boy Scouts and Girl Scouts and other groups in a year. The youth work on conservation jobs as a part of their camp experience.—GENE WARREN, *information specialist, SCS, Alexandria, La.*

New York

Youth corps aids woodland owners

A conservation district in New York State is offering its cooperators a new service—woodland improvement that includes pruning, thinning, and cull removal.

Thousands of acres of cutover woodlands and abandoned farmland being returned to woodland needed treatment. Less desirable species were crowding out valuable hard maple, yellow birch, and black cherry. Owners were interested in conservation management, but few could do the job without help.

In 1967 the Franklin County Soil and Water Conservation District hired a foreman to direct a group of Neighborhood Youth Corps boys. That year they improved 84 acres. The following year they worked on 241 acres and planted 250,000 trees. And in 1969, they improved 350 acres and planted 294,000 trees. Plans are to raise the 1970 goal of the woodland crew to 500 acres of woodland improvement and the planting of 350,000 trees.

State foresters say that cooperators receive a quality job from the district crew. Woodland management work also makes it possible to harvest sawlogs many years earlier than otherwise would be the case.

Agencies contributing to the success of the work are the New York State Environmental Conservation Department, Agricultural Stabilization and Conservation Service, Neighborhood Youth Corps, and the Soil Conservation Service.—KENNETH C. COBB, *soil conservation technician, SCS, Malone, N.Y.*

Virginia

All-year grazing lowers labor costs

William T. Barnes III, who farms near Blackstone in the Piedmont Soil and Water Conservation District of Virginia, manages his pastures for year-round grazing. It has reduced his labor needs by 80 percent, he believes.

Barnes has revised his conservation farm plan many times. He prepared his present plan with the help of Pat Trew, Soil Conservation Service grassland conservationist.

"I used to work full time on the farm and use one full-time man to help," Barnes recalled. "Now I use

Tommie Barnes notes the thick growth of fescue in one of his well-managed winter pastures.

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Village resident and friend.

a little part-time labor and have a part-time job that keeps me away from the farm more than half the time. I make more money than ever."

Barnes says advantages of his present grazing plan include less disease, heavier calves, lower costs, and less supplemental feeding. Profits have gone up because it costs less to keep a cow for a year.

In past years tobacco, corn, and small grain were the crops on the Barnes land. Terracing, needed then, no longer is required. Barnes' good stand of pasture grasses does a good job of controlling erosion.

Barnes' management is aimed at producing grass ahead of the time his cows need it. He grazes 125 cows on 336 acres. The herd is about half Angus and half Hereford.

Barnes has 212 acres of tall fescue, 40 acres of orchardgrass, and 84 acres of common bermudagrass. He manages about 120 acres of the fescue for winter and early summer grazing. The remainder of the fescue is used in spring and fall. The orchardgrass is cut in the spring for hay and is grazed in the fall. The bermuda furnishes summer grazing.

Barnes is a believer in soil testing. Phosphate and potash are applied to all pastures according to a test. Nitrogen is applied to produce growth at the desired time. The winter pastures get 70 to 80 pounds of nitrogen in early August. Cows are moved off and growth accumulates until late November or December. Spring and fall grazed pastures get about 50 pounds of nitrogen in August. Orchardgrass gets about 80 pounds of extra nitrogen in the spring to insure a good cutting of hay. Bermuda will get about 40 pounds of nitrogen in late April and 40 pounds more in July if needed.

Cattle are moved when grasses are grazed to an average height of 3 inches. Grazed pastures are rested to accumulate growth for the next period of grazing.—WILLIE B. IRBY, *district conservationist, SCS, Nottoway, Va.*

New Hampshire

Animal 'village' opens for business

Tilton's Animal Village is the name on the sign. The "villagers" are lambs, calves, ducklings, pigs, goats, donkeys, cows, and other friendly animals.

The Charles Tiltons, cooperators with the Belknap Conservation District in New Hampshire, considered other uses for their 26 acres in the heart of the Lake Winnipesaukee recreation complex. Developing the land for camping would be too expensive. Other possibilities, including fee fishing, had little appeal.

The animal village idea, which would include an outlet for Mr. Tilton's woodworking products and Mrs. Tilton's jams and jellies, seemed to be the answer.

Into the conservation plan went a pond, a nature trail, and the improvement of pasture and woodland. A Farmers Home Administration loan financed the making of the small barn into a store and woodworking shop.

Animal tenants came from far and wide, some donated and others bought.

The Tiltons opened on a sunny day in May of this year. As the weeks pass, everything points to success for the unusual enterprise. —CLEMENT A. LYON, JR., *district conservationist, and* CHARLES S. BROWN, *state resource conservationist, SCS, Durham, N.H.*

Kansas

4-H members lead conservation tours

Conservation tours, with 4-H Club members in leading roles, are proving effective in enabling the Elk County Soil Conservation District in Kansas to deliver its conservation message.

At each tour stop a young 4-H host explains the conservation work in view.

Each year since 1952 the tours have given businessmen, townspeople, and farmers a clearer understanding of the district's conservation objectives. Each tour is on a different theme. Past tours have emphasized such themes as range management, watersheds, woodland management, and land treatment.—GLEN P. SNELL, *district conservationist, SCS, Howard, Kans.*

Arizona

Stories of plants hold pupils' interest

Carmen Gauman was expressing her appreciation to E. Phil Young, whose delight during the school year is to lead groups of children down the fascinating nature trail at the SCS Plant Materials Center at Tucson, Ariz.

"Dear Mr. Young," the Carrillo School pupil wrote. "Thank you for such wonderful stories. I think you were brave, to put your hand in the doorway of the bees . . ."

Young is field superintendent at the station. He gets scores of appreciative letters like Carmen's during the year following visits by school groups.

Each year a total of about 600 young people, from five to 18 years old, visit the center in groups to walk the nature trail with Young. The trail is through an arboretum planted a quarter-century ago. Native plants grow there with introduced varieties, and Young has an absorbing story about each.

The hive of wild bees, enclosed in glass, is a special attraction for the young visitors. Most children, aware of the reputation of bees, are amazed as Young casually places his hand near the opening of the hive and lets bees crawl over it. But in the plant world, as Young explains, the bees and other insects play a most important role with their pollination services.

Young has more than 25 years of scouting in his career. He is an adviser for Explorer Post 200 of the Catalina Council, Boy Scouts of America.

The Explorer Post has helped repeatedly with conservation projects in the community. On a recently acquired tract they are working on a "conservation showroom" where steps leading to a quality environment will be demonstrated.

Young has been active each year in the Conservation Youth Camp on the San Carlos Apache Reservation at the Point of Pines. He teaches principles of soil and water conservation to the young participants. The Arizona Association of Soil and Water Conservation Districts and the Arizona Extension Service sponsor the camp.

A writer recently referred to Phil Young as a man who thinks young, a faculty he demonstrates each time a group of young guests arrives at the Plant Materials Center.—ROBERT D. SLAYBACK, *manager, Plant Materials Center, SCS, Tucson, Ariz.*

Nebraska

Great Plains contract helps Girl Scouts

Girl Scouts at Camp We-So-Braska near Nelson, Nebr., will reap the benefit from a Great Plains Conservation Program plan on their land.

The Scouts bought an 80-acre tract with a Great Plains contract on it that lasts until 1972. The Soil Conservation Service, through the Nuckolls County Soil and Water Conservation District, modified the contract to fit the needs of the new owners.

Contractor Bob Shuck built a pond, prepared the site for the lodge, and improved the road. These were features of the plan of the Nuckolls District. A lumber company added the lodge. Kiwanis and Chamber of Commerce members built a swinging bridge across Elk Creek so the girls could use the city swimming pool nearby. They installed water and power and helped build 15 tent platforms.

The plan calls for converting 55 acres of cropland to native grasses, complete with trails marked to acquaint the girls with grass names. Other areas are set aside for trees.

The dam and work on associated streams are already a study in flood prevention and water management.

Oregon

Farmers and town join to restore canal, dam

A new concrete dam with removable flashboards has restored irrigation water and reduced flooding for a community and surrounding farmland in western Oregon.

The dam replaces an old rock structure built long ago and destroyed by a flood during the Christmas holidays.

The dam and the canal restoration are being financed by a combination of federal and local funds. Nineteen farmers, the city of Brownsville, the Linn County Court, Pacific Power and Light, Linn County Agricultural Stabilization and Conservation Committee, the Linn-Lane Soil and Water Conservation District, and the Soil Conservation Service helped to make the undertaking a reality. It is being carried out as a special Agricultural Conservation Program project.

Cost of the project will total $34,517: $24,910 for dam and $9,607 for restoration of canal, construction of bypass structure, bypass ditch, and drop structures.

Besides restoring irrigation and stock water, the dam and connecting ditches will drain about 100 acres of cropland between the canal and the Calapooya River.

Substituting the removable flashboard structure for the former solid dam will reduce flooding and control erosion on about 250 acres of valuable orchard and cropland. The canal intercepts runoff water from some 1,500 sloping acres.

Since there are few springs or adequate wells around Brownsville, water in the canal is important to wildlife in the area. The canal should provide recreation when restoration is completed.

Canal water irrigates many gardens and yards in town and on farms. This adds to attractiveness of the area.

The project also will provide water for periodically flushing sewerlines in the east edge of Brownsville into the city sewage disposal lagoon. And it will be a source of water for fire protection—something especially important for timberland north of the canal.—RICHARD I. BONN, *biologist, SCS, Albany, Oreg.*

New York

Fish take the bait to keep water flowing

A record manufacturing company, at Gloversville, N.Y., approached the Fulton County Soil and Water Conservation District with a special problem.

A large pond had been built for cooling purposes in the manufacturing process. Soon afterwards problems developed with the water-intake pipe. The screen kept getting clogged with the remains of frogs and other water life in the pond.

At the recommendation of the SCS district conservationist, the company stocked the pond with several hundred largemouth bass. The bass promptly began clearing the pond of frogs and tadpoles, and the company has had no further problems with its pond water.—ARNOLD FREDERICK, *conservation technician, SCS, Johnstown, N.Y.* ♦

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Windbreaks for ponds

In the Pilger Creek watershed in northeastern Nebraska, the town of Pilger has planted one of the state's first "pond windbreaks."

It consists of a row of Siouxland cottonwoods, backed up by two rows of redcedar and a row of pine along the north and west sides of the 52-acre impoundment.

When the windbreak has reached sufficient height, it will reduce wave action on the pond, make boating and swimming safer, and shelter picnic areas.

Windbreaks have been used for many years in Nebraska to protect homes, farm yards, livestock, roads, and wildlife. Now ponds have been added to the list, a conservation move that stands, Soil Conservation Service conservationists believe, to gain rapidly in popularity. Winds moving across a pond's surface cause wave action which erodes shorelines and the earthfill of dams.

A windbreak will reduce the effect of wind on the water's surface downwind about 10 times the heights of the trees. Cottonwood on such sites can attain 60 feet in height and would have the potential of practically eliminating waves for 600 feet and of keeping waves to heights of 2 feet or less on water surfaces up to a quarter-mile long.

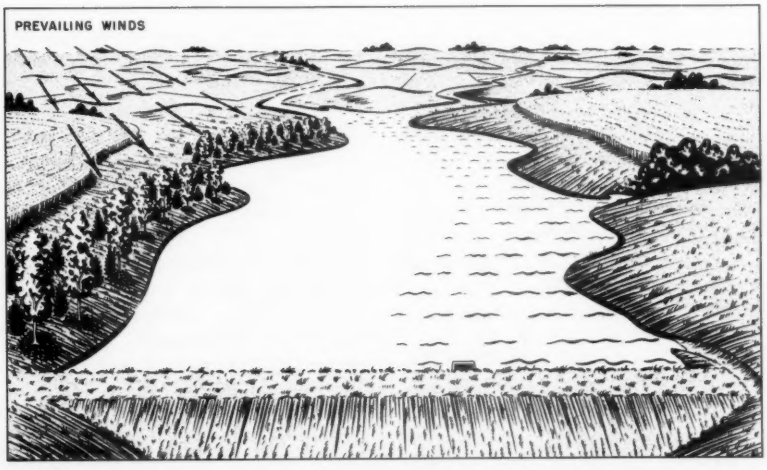
Trees planted on a lake's shore can produce a relatively calm haven.

The Pilger Lake plans call for family-type recreation areas around the lake on 278 acres the town owns. The town has seeded the land away from the lake to native grasses for erosion control, natural beauty, and wildlife cover.

Game and song birds will find nesting, cover, food, and water in and near the windbreak.

In the three winters since the lake was created as a segment of the Pilger Creek Watershed Project, it has been a popular ice skating spot. Cold winds usually accompany winter temperatures in Nebraska, so the windbreak's winter service will be the sheltering of skaters.

Motor boating is not permitted yet on the lake. SCS District Conservationist Gene Phillips, who is assigned to Stanton County Soil and Water Conservation District, explained that power boats and wind together would add to the maintenance problem. As soon as the windbreak has grown enough to do its work, boats with limited power and speed may be allowed, Phillips thinks.—CLARENCE E. DENNIS, *soil mechanics engineer,* and JAMES W. CARR, JR., *forester, SCS, Lincoln, Nebr.* ♦



Meetings . . .

Universities to discuss research and extension

The National Association of State Universities and Land-Grant Colleges meets in Washington, D.C., Nov. 8-11.

Important sessions will be held on teaching, research, and extension. A few are limited to accredited members of the member institutions, but many sessions are open to all comers. Many of the papers and sessions will be of interest to SCS and other USDA agencies that cooperate regularly with the land-grant universities.

Water Association for better quality of life

"A better quality of life for all Americans through planned resource development" is the program aim of the 39th convention of the National Water Resources Association, November 16 to 20, Las Vegas, Nev. This theme also underlines the association's identification, "water care, to sustain nature and supply man." A tour is planned of the Southern Nevada Water Project, Las Vegas Water District facilities, and Hoover Dam and Lake Mead.

Symposium on irrigation

The American Society of Agricultural Engineers and the Department of Agricultural Engineering of the University of Nebraska are sponsoring a National Irrigation Symposium to be held November 10-13 in Lincoln, Nebr. Cooperating are the American Society of Agronomy, American Society of Civil Engineers, USDA Federal Extension Service, Soil Conservation Society of America, Sprinkler Irrigation Association, and United States Committee on Irrigation, Drainage, and Flood Control.

Grange highlights rural development

The Nation's oldest farm organization, the National Grange, will hold its 104th annual session in Boise, Idaho, November 9-17. There are 7,000 local Granges throughout 38 states and the Philippines. Discussions will include pesticides, trade, economic development of rural America, family assistance programs, and a "waterway users" tax.

Dates and places

November 5-6, American Forest Institute, Washington, D.C.
5-6, Keep America Beautiful, Inc., New York, N.Y.
8-11, National Association of State Universities and Land Grant Colleges, Washington, D.C.
9-17, National Grange, Boise, Idaho.
10-13, National Irrigation Symposium, Lincoln, Nebr.
10-13, American Association of State Highway Officials, Houston, Tex.
11-13, Geological Society of America, Milwaukee, Wis.
16-20, National Water Resources Association, Las Vegas, Nev.
24-Dec 11, International Commission on National Parks, New Delhi, India.
27-29, National Association of Farm Broadcasters, Chicago, Ill.
December
1-7, National League of Cities, Atlanta, Ga.
2-4, National Association of Manufacturers, New York, N.Y.
7-11, American Society of Agricultural Engineers, Chicago, Ill.
13-18, 1970 White House Conference on Children, Washington, D.C.
26-31, American Association for the Advancement of Science, Chicago, Ill.
27-30, American Agricultural Economics Association, Detroit, Mich. ♦

Review

Soil Biology; Reviews of Research. *1969. UNESCO, Paris. 240 pp. (also in French) $11.00. (Distributed by Unipub, Inc., 650 First Avenue, New York City, N.Y. 10016).*

This is an outstanding volume summarizing research related to the microfauna and microflora of the soil and their activities. Five papers make up the book. No index is provided, but the table of contents is very well done.

The first paper, by Pochon, Tardieux, and d'Aguilar, deals for the most part with the techniques used in studying microorganisms. The second, by Mishustin and Shilnikova, deals with the fixation of nitrogen by free-living bacteria, as compared with the symbiotic forms on legumes.

Francis Clark offers the third paper on ecological interrelationships among soil microbes, including predation, parasitism, suppression (unfavorable influences of one organism on the environment of another), competition, symbiosis, and the root zone. The fourth paper is by Mulder, Lie, and Woldendorp on soil fertility, the nitrogen cycle, phosphorus cycle, and trace elements (such as manganese and copper) transformed by microorganisms.

The final article by Alexander discusses pesticides in the soil, what microbes do with them, and their effects on the microfauna and flora. One table in the paper summarizes a large number of studies, showing the length of life in the soil of a large series of pesticides. Those of the chlorinated hydrocarbon group (including dieldrin, chlordane, DDT, heptachlor, toxaphene, and others) remain active for many years, as listed in the table. Another table lists the bacteria, myxomycetes, and fungi known to be active in degrading pesticides. Other tables show the pesticides that inhibit various types of microbes and others that do not.

This work is necessarily highly technical. Names of the authors will be familiar primarily to soil scientists. The five papers are supported by extensive bibliographies. In total, the book brings up to date our knowledge in the fields discussed. It is an important reference for soil scientists, and of value as well to ecologists.—WILLIAM R. VAN DERSAL, *deputy administrator for management, SCS, Washington, D.C.*

Toward Balanced Growth: Quantity with Quality. *1970. Report of the National Goals Research Staff (U.S. Government Printing Office). 228 pp., charts; paper. $1.50.*

"In the next 10 years we shall increase our wealth by 50 percent. The profound question is—does this mean we will be 50 percent richer in a real sense, 50 percent better off, 50 percent happier?" President Nixon asked this value-laden question in his State of the Union message last January, and it aptly applies to the issues raised in this report.

The National Goals Research Staff was established by the President in July 1969. As its first task, it was asked to collect data and prepare an annual report on the possible range of national goals for 1976—the Nation's 200th anniversary—to be used for discussion and as an aid to making intelligent policy decisions.

The first report is centered on the theme of balanced national growth. Six areas of concern or "emerging debates" were selected, and each was discussed in a separate chapter. They are (1) population control and/or redistribution; (2) the environment and its capacity to deal with problems created out of our economic "successes" and affluence; (3) the role of education in a changing complex society; (4) the role of basic natural science in society and its lack of social and

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financial support; (5) technology and its undesirable side effects; and (6) the demands for more consumer protection and information because of technology's rapid introduction of numerous complex products.

Basically underlying all these issues is the question of social philosophy—the kind of life style the majority of Americans want, and the price they are willing to pay to have it.

Although the issues actually "emerged" some time ago and there is nothing new in the discussion here, the report has value because of its source, its clarity and organization, and its emphasis on the need for more information to help make intelligent policy choices and to carry them out. The report is most encouraging in that it does indicate there still is time to make choices when so many voices proclaim doomsday on the horizon.—GRACE KRUMWIEDE, *Information Division, SCS, Washington, D.C.*

Use and Conservation of the Biosphere. *1970. UNESCO, Paris. (Distributed by Unipub, Inc., New York). 272 pp. $6.00.*

As if the state of America's environment weren't already enough to stagger the imagination and drain the Treasury, here's another book of technical papers to remind us that the world pollution situation isn't any brighter. After you get through all the fine print and esoteric language, the results of the Intergovernmental Conference of Experts on the Scientific Basis for Rational Use and Conservation of the Resources of the Biosphere (Sept. 1968) are about as earth-shaking as one might expect. The 24 recommendations reiterate our need for more education, more research, more cooperation—more of everything. Intergovernmental, interdisciplinary and interagency—those familiar adjectives—appear frequently.

Subject areas dealt with in detail include: Contemporary scientific concepts relating to the biosphere; soil fertility; water resources, present and future; conservation's scientific foundation; management of natural vegetation; animal ecology and wildlife management; natural area preservation and protection of endangered species; environmental deterioration; man and his ecosystems (a poignant article by René Dubos, former presidential science adviser); and man's impact on the biosphere (a balanced presentation by F. Fraser Darling, British ecologist).

Intermingled with statistics, ecological concepts, and historical tangents are: Some interesting ways to cope with our predicament (more efficient fish, wildlife, and poultry management; and an "intelligence agency in matters of human ecology"); eye-openers ("the major use of fresh water in advanced countries is for the dilution and transport of wastes."); and some points on which all the conferees agreed (the problems are universally perplexing, entangled and expensive).

When it comes right down to putting money and talent where the mouths are, how much will we give to get a world worth living in or passing on to future residents?—CHARLOTTE R. CONRAD, *Information Division, SCS, Washington, D.C.*

New publications

An Expanded Great Plains Conservation Program for the 1970's. *1970. USDA PA-960 [6] pp., illus.* This folder lists the progress of the program since 1957 and explains that the program now makes additional provisions for: Disposal of animal wastes; developing recreation and fish and wildlife resources; conservation work on nonfarmland adversely affecting a farming area; and promoting the economic use of land.

Also the program places priority on areas subject to severe wind and water erosion and on areas where a change in land use is needed. It provides needed help to groups of farmers and ranchers who are unable to solve unusual conservation problems working separately. It encourages efficient use of water resources but places a practical limit on cost sharing for irrigation improvements and for practices enhancing recreation and fish and wildlife resources. It encourages the conservation management of range cover and crop residues to reduce erosion, improve the soil, and stabilize the operating unit.

National Patterns of R&D Resources, Funds and Manpower in the United States, 1953-70. *1969. National Science Foundation NSF 69-30. 36 pp., illus. $0.55.* Data obtained show the pattern of utilization of national technical resources, both funds and scientific talent, among the various sectors of the economy. This document is the second report issued. It summarizes the data, and shows historical trends and interrelationships, extends the series through and provides an estimate for 1970.

Federal Funds for Research, Development, and Other Scientific Activities, Fiscal Years 1968, 1969, and 1970, Volume XVIII. *1969. National Science Foundation, NSF 69-31. 280 pp., illus. $2.50* Based on a survey of Federal departments and agencies to determine the funds they provided or intended to provide in support of scientific activities during fiscal years 1968, 1969, and 1970. It is the 18th report in a continuous series; it provides another increment to the historical perspective of Federal involvement in science and technology.

Solid Waste Processing. *1969. U.S. Dept. Health, Education, and Welfare, Public Health Service. 72 pp., illus. $0.75.* A state-of-the-art report on solid-waste unit operations and processes. A comprehensive reference that includes information on the reliability of processes, performance data, economic factors, and range of commercially available equipment. Prepared as an aid to researchers and others engaged in solid-waste management.

Backpacking in the National Forest Wilderness . . . A Family Adventure. 1969. *USDA PA-585. 27 pp., illus. $0.25.* Gives reasons for traveling light, the kind of footgear to wear, equipment needed, and lists sample menus and the wildernesses and primitive areas in the National Forests.

Soil surveys

Safford Area, Arizona. BY FREDERICK W. GELDERMAN. *1970. 57 pp., illus.; maps 3.17 inches to the mile (1:20,000).* Soils surveyed by Frederick W. Gelderman, Paul Winkelaar, J. E. Brown, and Robert T. Meurisse.

McCreary-Whitley Area, Kentucky. BY JAMES G. BYRNE, CRAIG K. LOSCHE, CHARLES R. GASS, G. DEAN BOTTRELL, PETER E. AVERS, JOHN K. LONG, AND LEWIS G. MANHART. *1970. 83 pp., illus.; maps 4 inches to the mile (1:15,840).*

Recon . . .

The press has harnessed its power to fight pollution in the Maumee River Basin. After 10 years of editorial page support and concern for the Maumee, the Toledo (Ohio) *Blade* sent out reporters and hired consultants to document conditions. Their reports and plans led to the formation of Clear Water, Inc., a nonprofit organization to coordinate private and public efforts to clean up the river and its tributaries. Clear Water Administrator Ned Skeldon predicts it will be possible to swim in the Maumee at Toledo within 3 years—"the first major industrial river in the Lake Erie Basin to reach that condition." Swan Creek, once called the "shame of Toledo" by the *Blade*, now has a small watershed project approved for planning. Clear Water has encouraged local and regional water-pollution abatement programs and updating the state water-resources program.

The cost-benefit ratio of community cleanup campaigns is being boosted by the gradual expansion of manufacturer-sponsored can and bottle reclamation programs. Kaiser Aluminum and Chemical Corporation and the Reynolds Metal Company operate collection centers and pay a small bounty for all-aluminum cans. (The Aluminum Association says that aluminum's recovery value per pound is 10 times that of other packaging materials). There is a similar reclamation program for glass bottles that involved about 100 factories in 25 states. According to the Glass Containers Manufacturers Institute, used glass can be made into new bottles, glass wool insulation, bricks and blocks of crushed glass, and even "glasphalt" — an experimental road-building material.

If you hear two men discussing the length instead of depth of their wells, chances are they're from Arizona. Horizontal wells drilled into water-bearing strata in that semiarid state are providing livestock water on rangeland. Once developed these "encased springs" (as they are referred to in the July 1970 issue of *World Farming*) need no power system or pumps. They tap water supplies that might be passed by conventional drilling, and they are both inexpensive and reliable. The two basic geologic formations that yield water for horizontal wells are found in a "substantial portion of the better rangeland in Arizona and other parts of the Western United States."

Our choice—plan or adapt

"Man can achieve some form of tolerance to environmental pollution . . . (which) . . . enables him to overcome effects that are unpleasant or traumatic when first experienced. But in many cases, it is achieved through organic and mental disorders which may result in the chronic and degenerative disorders that so commonly spoil adult life and old age, even in the most prosperous countries . . . Man can also learn to tolerate ugly surroundings, dirty skies, and polluted streams . . . The ultimate result, however, can be and often is an impoverishment of life, a progressive loss of the qualities that we identify with humanness and a weakening of physical and mental sanity." —RENE DUBOS, *former presidential science adviser.*

Fifty is the magic number for several New Hampshire towns that are taking part in an abandoned car pickup program arranged by the North Country Resource Conservation and Development Project. A salvage operator stops at several collection points after he is told that the total number of old cars exceeds 50. RC&D Project officials initiated the project and made the original contract agreement. Town officials are responsible for maintaining publicity and pickup service and determining the place to pile the hulks until the collector makes his rounds again.

Looking ahead . . .

Nature itself, without man's stewardship, has rarely been productive enough to meet man's needs—certainly not in the numbers in which we exist today and will exist in the future. Yet our resources must serve every economic and social need of mankind. The challenge is to maximize the productivity of the environment for both necessities and amenities and assure continued use into the very long future.

This requires an integrated approach to assure:

(1) The necessities of life: Adequate food, fiber, shelter, and raw materials for industry.

(2) The safety of man: Safe and adequate water, clean air, productive and safe soil held in place, sanitation, disease and pest control, the perpetuation of basic life processes.

(3) Quality of life: Space to live, attractive surroundings, suitable habitat for plants and animals, outdoor recreation, and esthetic satisfaction.—SECRETARY OF AGRICULTURE CLIFFORD M. HARDIN, *at the National Farm Institute, Des Moines, Iowa, Feb. 12, 1970.*

Soil micro-organisms are under cover agents for an irrigation-drainage treatment experiment in California's San Joaquin Valley. Researchers are using microbe power to clean nitrate-laden waste water from irrigated fields. By placing tile-drain lines at varying levels below the water table, they create conditions that enhance denitrification processes. Scientists hope to learn the best pipeline depth for adequate denitrification of drainage water before discharge. Favorable results of laboratory work done by Agricultural Research Service scientists at Brawley, Calif., preceded current, full-scale field studies near Firebaugh, Calif. SCS and the Bureau of Reclamation are cooperating in the project described in the May 1970 issue of *Agricultural Research.*

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From the Administrator:

They'd rather learn by doing it

Here's a question for the "over 30" professionals in resource conservation: Are we hampered by a generation gap in our effort to get on the right wave length with the young people of America?

We have built the resource-conservation movement on a deeply rooted faith in the future of America. We firmly believe that the principles of resource conservation can produce a satisfactory environment for the generations following us.

We have been aware, however, of a degree of "static" in our efforts to tell the conservation story. This part of our program is by no means limited to the "under 30" audience.

An abiding belief in the future undoubtedly accounts in large measure for the dedicated efforts by the Nation's corps of professional conservationists and resource managers to acquaint young America with basic conservation practices and understanding and to involve the youth of this country in purposeful conservation projects in their own communities.

Many organized groups, such as Boy Scouts, Girl Scouts, Campfire Girls, and 4-H Clubs, carry out conservation programs in structured fashion, offering tangible rewards for work accomplished.

Other young people receive their initial introduction to natural resource relationships through camping experiences with youth organizations or church groups or by means of school-sponsored field trips.

Adults sometimes have a tendency to equate teaching with talking. Youngsters prefer to learn by doing. For most young people today, such programs must have a sense of purpose, not only for the moment of doing, but for the larger intention and the long-range objectives as well.

To offer young people a "conservation project" for which all decisions have been made and all details worked out in advance by adults is a way of saying, "Here's a new toy. It will keep you in the fresh air and exercise your muscles, but you can stash your brains."

Conservationists of the Soil Conservation Service often are called upon to help with youth programs in resource use and management based on conservation principles. Many of these projects offer opportunities for involving young people in the planning stages of the activity. In helping to develop a conservation plan for a camp, for example, youngsters gain an extra dimension of environmental understanding. They can relate the many rows of trees to be planted, the many miles of streambank stabilization needed, to the long-range plan for the camp and to their own stake in the camp.

District leaders also have a responsibility toward the individual involvement of youth. Invitations to youth groups to attend conservation-planning meetings, or to serve as adjunct committees on projects within the community, can bring about a deeper perception of personal responsibility toward the use and management of natural resources.

A conservation project for any youth group should never be considered to be simply a high-class outdoor baby-sitting service designed for adolescents. In reality it is a significant opportunity to weave into the fabric of resource relationships still another natural resources strand—this one resilient with youthful enthusiasm and imagination—to add strength and excitement to the web of life upon which the future environmental quality for all mankind depends.

Kenneth E. Grant

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Outdoor fun instead of floods

Twin Valley Lake in Wisconsin's Governor Dodge State Park was designed primarily as a flood-prevention development.

However, if residents of the area mention it, they are apt to speak of it first as a fine place for boating, fishing, swimming, and camping.

The park, now with two lakes instead of one, is regarded as one of the state's outstanding areas for recreation. Before Twin Valley Lake was built, water-related recreation for the area was provided by Cox Hollow Lake with its swimming beach and bathhouse.

The new lake, with 150 acres of surface water, is a joint effort of the Soil Conservation Service and the Wisconsin Department of Natural Resources. Costs of the dam were shared, with design and supervision of construction by SCS.

The Twin Valley Dam improved the stream for trout fishing. This was made possible by the release of water from the lake's cool bottom into the stream. The stream suitable for trout extends about 3 miles from the dam.

Wisconsin's Department of Natural Resources shared in the development of Twin Valley Lake, now a popular recreation spot.

Birch Lake near Barneveld, with a growing reputation for good trout fishing, also was developed as a flood-prevention structure with the cost of recreation features shared by project sponsors. It is a small lake with facilities for picnicking and swimming.

The new Twin Valley Lake area has been developed for swimming, picnicking, and boating, although boats with motors are not permitted. Trails called "White Oak" and "White Pine" provide an opportunity for contact with Wisconsin's fascinating natural environment.—CHARLES V. BOHART, *recreation specialist, SCS, Lincoln, Nebr.*

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